Claims

1. Arrangement for controlling transmission and/or reception of signals in a radio communications system, comprising transceiving means (TX,RX) each connected to one element of an array of antenna elements (#1...#n), wherein at least one of said transceiving means (TX,RX) is additionally connected to a calibration antenna for transmitting and/or receiving test signals to and/or from said antenna elements (#1...#n), at least one calibration processor for determining variations of said test signals in said transceiving means (TX,RX), and a beamforming processor for taking into account the determined variations for beamforming and/or determination of direction of arrival of respectively transmitted and received radio signals by said antenna elements (#1...#n).

2. Arrangement according to claim 1, wherein a transmission gap in a time frame of a TDD system is used for the transmission of said test signals for determining variations in the calibration processor.

3. Arrangement according to claim 1 or 2, wherein in the said at least one transceiving means (TX,RX) connected to the calibration antenna test signals are switched via a switch (S) to the calibration antenna in a calibration process.

4. Arrangement according to one of the preceding claims, wherein said calibration processor is realised within the beamforming processor.

5. Arrangement according to one of the preceding claims, comprising
at least one lookup table for storing the determined variations of the individual transceiving means (TX,RX).

6. Arrangement according to one of the preceding claims, wherein
at least two calibration processors, each determining variations for a different radio frequency, are connected to said transceiving means (TX,RX) via a base band multiplexer.

7. Base station (BS) of a radio communication system, comprising an arrangement according to one of the preceding claim.

8. Method for controlling transmission and/or reception of signals in a radio communication apparatus (BS), the radio communication apparatus (BS) comprising transceiving means (TX,RX) each connected to one element of an array of antenna elements (#1...#n), at least one of the transceiving means (TX,RX) being additionally connected to a calibration antenna, wherein
in a receiver calibration procedure, test signals are generated, fed to the at least one transceiving means (TX,RX) connected to the calibration antenna, transmitted via the calibration antenna and received by said antenna elements (#1...#n) and corresponding transceiving means (TX,RX), and/or
in a transmitter calibration procedure, test signals are generated, fed to the transceiving means (TX,RX), transmitted via said antenna elements (#1...#n), and received by said calibration antenna and said one of the transceiving means (TX,RX),

variations of the test signals in the transceiving means (TX,RX) are determined in at least one calibration processor, and

the determined variations are taken into account for beamforming and/or determination of direction of arrival of respectively transmitted and received radio signals by said antenna elements (#1...#n).

9. Method according to claim 8, wherein
variations of the test signals are determined consecutively for different radio frequencies.

10. Method according to claim 8 or 9, wherein
variations of the test signals are determined concurrently for different radio frequencies, thereby using individual calibration processors for the different radio frequencies.

11. Method according to one of the preceding claims 8 to 10, wherein
transfer functions of the transmitting and/or receiving paths are determined in the calibration processor.

12. Method according to one of the preceding claims 8 to 11, wherein
the calibration processor determines a maximum of a phase and amplitude difference of a coupling coefficient.

13. Method for controlling transmission and/or reception of signals in a radio communication apparatus (BS), the radio communication apparatus (BS) comprising transceiving means (TX,RX) each connected to one of an array of antenna elements (#1...#n) and calibration transceiving means connected to a calibration antenna, wherein

in a receiver calibration procedure, test signals are generated, fed to the calibration antenna, transmitted via the calibration antenna and received by said antenna elements (#1...#n) and corresponding transceiving means (TX,RX), and/or in a transmitter calibration procedure, test signals are generated, fed to the transceiving means (TX,RX), transmitted via said antenna elements (#1...#n), and received by said calibration antenna and said calibration transceiving means (TX,RX), wherein a transmission gap in a time frame is used for the transmission and reception of said test signals, variations of the test signals in the transceiving means (TX,RX) are determined in at least one calibration processor, and

the determined variations are taken into account for beamforming and/or determination of direction of arrival of respectively transmitted and received radio signals by said antenna elements (#1...#n).